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10/019,705	05/13/2002	Kari Kalliojarvi	915-414	1802
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WARE FRESSOLA VAN DER SLUYS & ADOLPHSON, LLP BRADFORD GREEN, BUILDING 5 755 MAIN STREET, P O BOX 224 MONROE, CT 06468			EXAMINER	
			PEREZ, JULIO R	
			ART UNIT	PAPER NUMBER
			2617	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/019,705	<b>Applicant(s)</b> KALLIOJARVI, KARI
	<b>Examiner</b> JULIO R. PEREZ	<b>Art Unit</b> 2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 07 May 2008.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,6,9-11,13-15,19 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,6,9-11,13-15,19 and 22-31 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5-8, 10, 11, 13-15, 19, 20, 22-31, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wylie et al. (5,974,329) in view of MacDonald (5,732,354).

Regarding claims 1, 15, 23, Wylie discloses a method (and arrangement and a location server) measuring at least one feature of a signal received from the transmitting station at the receiving station, said feature being such that it can be used for determination of the distance between the transmitting station and the receiving station (col. 4, lines 7-10, 39-65, the signal strength from the mobile station may be measured in relation to its position within the different coverage areas; furthermore, the range measurements correspond to power signal measurements); and computing the distance

[i.e., range measurement] between the transmitting station and the receiving station using said measured signal feature [i.e., signal strength power] (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31), determining the current geographical location of one of the transmitting stations (col. 3, lines 3-5).

What Wylie does not specifically disclose is that the method is implemented in the system to store and determine a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of the base station, wherein the characteristic parameter describes excess path lengths caused by obstacles in the environment by means of one of a number of discrete levels; computing distances between the mobile station and the at least two mobile stations.

MacDonald teaches propagation loss model based on Hata model that includes propagation path slope within different propagation environment schemes, which in turn describe the propagation path, line of sight characteristics, of the terrain, thus, determining factors (levels) for different type of terrain and building density (col. 6, lines 48-67; col. 7, lines 1-59). McDonald further calculating a location estimate of the mobile telephone with receiving a list of signal strengths received by the telephone from cell sites, i.e., base stations within a serving coverage area and hence calculating the distances between the mobile and a plurality of cell sites (Figure 8; col. 6, lines 39-67, - col. 7, lines 1-15).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Wylie to include MacDonald as it is known to implement measurements

systems with coefficient factors (levels) or correction factors and determine distances among base stations and the mobile station to provide a more accurate location of the mobile station.

Regarding claim 5, the combination discloses at least one feature comprises at least travel time of the signal between the mobile and base station (Wylie, col. 4, lines 7-10).

Regarding claim 6, the combination discloses at least one feature comprises at least signal travel time differences between the mobile station and base station (Wylie, col. 4, lines 7-10).

Regarding claim 7, the combination discloses at least one feature comprises at least strength of the signal transmitted between the mobile and base station (Wylie, col. 4, lines 7-10, 39-65).

Regarding claim 8, the combination discloses at least one feature comprises the quality of the signal transmitted between the mobile and base station (Wylie, col. 4, lines 7-10, 39-65).

Regarding claims 10, 19, the combination discloses defining propagation environments for several stations; and classifying the stations in different radio propagation environment classes; wherein the characteristic parameter is based on the class of the station (MacDonald, col. 7, lines 30-40).

Regarding claim 11, the combination discloses the characteristic parameter is stored and processed in a location service node implemented in the mobile telecommunications system (MacDonald, col. 7, lines 51-67).

Regarding claim 13, the combination discloses the determination of the characteristic parameter comprises steps of: determining the current geographical location of said mobile station in way that is external to the telecommunications system; and inputting the results of the determination to the telecommunications system (Wylie, col. 3, lines 5-7).

Regarding claim 14, the combination discloses comprising use of a satellite based positioning system said determining of the current geographical location of the mobile station (Wylie, col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31).

Regarding claim 20, the combination discloses wherein the feature of the signal is based on one or several of the following: travel time of the signal between the transmitting and receiving stations, signal travel time difference between the transmitting and receiving stations, the strength of the received signal, the quality of the received signal (Wylie, col. 4, lines 7-10).

Regarding claim 22, the combination discloses the mobile station comprising a sector antenna (Wylie, Figure1A-1B).

Regarding claim 24, Wylie discloses an arrangement comprising: a first station (col. 4, lines 7-10, 39-65; Figures 1A-1B); a second station for communicating by radio with the first station (col. 4, lines 7-10, 39-65; Figures 1A-1B); means for defining the current geographical location of the first station by means of a source of location information that is external to the telecommunications system (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31; a GPS

system provides location information to mobile and base stations as evidenced by the fact that GPS units, (and within base station transceivers), in a mobile system, are located within mobile stations for providing and facilitating their geographical positions as well as transmitting such positions to respective base stations); determining means for determining a feature of a radio signal received by one of the stations from the other stations (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67- col. 6, lines 1-10, 26-31).

What Wylie does not specifically disclose is that the method is implemented in the system to store and determine a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of the base station, wherein the characteristic parameter describes excess path lengths caused by obstacles in the environment by means of one of a number of discrete levels; computing distances between the mobile station and the at least two mobile stations.

MacDonald teaches propagation loss model based on Hata model that includes propagation path slope within different propagation environment schemes, which in turn describe the propagation path, line of sight characteristics, of the terrain, thus, determining factors (levels) for different type of terrain and building density (col. 6, lines 48-67; col. 7, lines 1-59). McDonald further calculating a location estimate of the mobile telephone with receiving a list of signal strengths received by the telephone from cell sites, i.e., base stations within a serving coverage area and hence calculating the distances between the mobile and a plurality of cell sites (Figure 8; col. 6, lines 39-67, - col. 7, lines 1-15).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Wylie to include MacDonald as it is known to implement measurements systems with coefficient factors (levels) or correction factors and determine distances among base stations and the mobile station to provide a more accurate location of the mobile station.

Regarding claim 25, the combination discloses comprising means for receiving signals from a satellite based positioning system (Wylie, col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31).

Regarding claim 26, the combination discloses comprising means for determining if an update of the data concerning the radio propagation environment is required (MacDonald, col. 7, lines 5-40).

Regarding claim 27, the combination discloses wherein the first station comprises a portable device (Wylie, col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 7-10, 39-67).

Regarding claims 28, 30,, the combination discloses the signal is transmitted from the at least two base stations to the mobile station and the signal is measured at the mobile station (MacDonald, Figure 8, col. 6, lines 39-51).

Regarding claims 29, 31, the combination discloses the signal is transmitted from the at least two base stations to the mobile station and the signal is measured at the at least two base stations (MacDonald, Figure 8, col. 6, lines 39-51, base stations provider means for signal measurements).

Art Unit: 2617

4. Claim 9, is rejected under 35 U.S.C. 103(a) as being unpatentable over Wylie in view of MacDonald and Hilsenrath et al., 6,026,304 (hereinafter Hilsenrath).

Regarding claim 9, Wylie in view of Sheynblat and MacDonald does not explicitly disclose, comprising use of a weighted least square method for the determination of distances between the receiving and transmitting stations, wherein the used weighting matrix is the inverse of an error covariance matrix.

However, in a similar field of endeavor, Hilsenrath discloses a method and apparatus in a wireless communication system that accurately determines the transmitter's location (col. 6, lines 6-34-col. 7, lines 9-35-col. 8, lines 15-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination with the teachings of Hilsenrath for the purpose of having an entity that would efficiently and accurately locate the mobile station in a coverage area.

#### *Response to Arguments*

5. Applicant's arguments filed 05/07/2008 have been fully considered but they are not persuasive. Applicant argues that the combination of Wylie and MacDonald does not disclose or suggest a characteristic parameter that describes excess path lengths caused by obstacles in the environment and further that does not provide computing the distance based on measurements based on time and characteristic parameter or time of arrival and characteristic parameter. However, the examiner respectfully disagrees, Wylie teaches determining a range measurement, used as the distance, between the base station and mobile station, wherein the non line of sight ranging error, i.e.,

characteristic parameter, is corrected for the base stations, which are identified to be out of sight with relevant mobile stations, in which tests, the measurements may be reconstructed to obtain the line of sight measurements, thus reading on conditions of the parameters of line of sight, characteristic of LOS, as it is related to the environment on the radio propagation of the radio coverage. The base station can be determined to be at non-line of sight by studying the deviation standard measurement noise from the environment, i.e., characteristic parameters, to the standard deviation of smothered range measurements obtained from rage measurements (distance) between the base station and mobile station, wherein the standard deviation of the smothered range being I the order of the SD of the standard measurement of noise, i.e., characteristic parameter, wherein the base station corresponds to an LOS environment; hence the mobile station location can be determined using range measurements between LOS base stations and the mobile itself or, as specified above, via reconstructed LOS range measurements, which, in turn, corresponds to characteristic parameters of the line of sight conditions. Furthermore, giving its broadest and reasonable interpretation, Wylie teaches the determining characteristic parameter, which is used for determining the location of the mobile station; thus, the standard deviation determination through environment propagation determination, provides means to acquire characteristic parameters that in turn provide conditions of the propagation environment and therefore the location of the mobile station (see col. 2, lines 35-67, - col. 3, lines 1-7; col. 4, lines 7-10). Furthermore, McDonald teaches distances between the mobile telephone and each of the these cells (thus, i.e., several base stations), wherein the distance of the

mobile to cell sites may be determined and based on signal strengths, which signal strengths are known to travel with time between mobile phones and cell sites or base stations, thus calculating the arrival of such signals at the stations (col. 3, lines 23-53; Figure 8; col. 6, lines 37-67-col. 7, lines 1-15). Further, there is travel time shown in Wylie, col. 4, lines 7-22. Thus, it reads on the fact that there exists travel time of the waves, shown on the speed of the waves as related to time. In addition, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Thus, even though Wylie does not expressly disclose factors including the travel time measurements, one skilled in the art would conceptualize that the factors including such the information about the base stations and the mobile stations are necessary for the calculation of the strengths of the signals of the stations for connection purposes, and thus for calculating the distances between them. The Examiner points out to the teachings of MacDonald for further reference and support of this well known feature. Thus, one skilled in the art would combine these teachings to arrive at the present invention in order to increase the flexibility of locating the mobile station more accurately.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JULIO R. PEREZ whose telephone number is (571)272-7846. The examiner can normally be reached on 10:30 - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Julio R Perez/  
Examiner, Art Unit 2617

8/6/08

/Duc Nguyen/

Supervisory Patent Examiner, Art Unit 2617